Paper No. 15

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LEO E. MANZER, V. N. MALLIKARJUNA RAO
and
STEVEN H. SWEARINGEN

Appeal No. 1997-1821
Application No. 08/460,023

ON BRIEF

Before OWENS, WALTZ, and TIMM, Administrative Patent Judges.
WALTZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the primary examiner's final rejection of claims 1 through 7, 10 and 13 through 20, which are all of the claims remaining in this application (see the Brief, page 2). In the Answer, the examiner states that claims 13-15, 19 and 20 are allowed while claims 2 and 10 are objected to as being dependent on a rejected base claim, but these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims (Answer,

page 1). Accordingly, claims 1, 3-7 and 16-18 remain on appeal (*id.*). We have jurisdiction pursuant to 35 U.S.C. § 134.

According to appellants, the invention is directed to reducing the fluorine content of an acyclic saturated compound of a specified formula, where this compound is reacted with HCl in the vapor phase at an elevated temperature in the presence of a catalyst, with the mole ratio of HCl to the acyclic saturated compound being at least about 1:1 (Brief, page 3). Illustrative independent claim 1 is reproduced below:

> 1. A method for reducing the fluorine content of an acyclic saturated compound selected from the group consisting of $CHC1_2F$, $CHClF_2$, CHF_3, $CHClFCF_3$, $CHCl_2CF_3$ and CHF_2CH_3, comprising the step of:
>
> reacting said acyclic saturated compound with HCl in the vapor phase at a temperature within the range of from about 250˚C to 450˚C in the presence of a catalyst, the mole ratio of HCl to said acyclic saturated compound being at least about 1:1.

The examiner has relied upon Elsheikh et al. (Elsheikh), U.S. Patent No. 5,177,271, issued Jan. 5, 1993, as the sole evidence of obviousness. Thus the claims on appeal stand rejected under 35 U.S.C. § 103 as unpatentable over Elsheikh (Answer, page 3). We *reverse* this rejection for the reasons set forth below.

OPINION

The examiner finds that Elsheikh discloses and claims a process where 1,1,1-trifluoroethane is reacted with HCl at a temperature of from 300-700°C. in the presence of a catalyst using an HCl to trifluoroethane mole ratio of from 2:1 to 4:1 to produce vinylidene fluoride (Answer, page 3). The examiner finds that the process of Elsheikh reduces the fluorine content of 1,1,1-trifluoroethane (from 3 to 2 fluorine atoms) utilizing conditions which overlap those recited in the claims on appeal (Answer, page 4).

The examiner recognizes that the starting materials (the acyclic saturated compounds) required by claim 1 on appeal differ from the starting material of Elsheikh (1,1,1-trifluoroethane)(Answer, page 4). The examiner further finds that it is well known in the art that dehydrofluorination of halogenated ethane derivatives is applicable to "a wide range of ethane derivatives." Answer, page 5. The examiner also finds that the starting materials of the claims on appeal are "well known commercially available compounds" and the corresponding unsaturated products produced by the Elsheikh process are "well known useful compounds," thus motivating one of ordinary skill in this art with

the "reasonable expectation" of obtaining vinyl fluoride or a derivative (Answer, pages 5-6). We disagree.

The examiner recognizes that Elsheikh is limited to a single starting material, namely 1,1,1-trifluoroethane (Answer, pages 3-4). The examiner also recognizes that the specific starting materials required by claim 1 on appeal differ from this starting material of Elsheikh (Answer, page 4). The examiner does not find that the starting materials of Elsheikh are structurally similar to those recited in the claims on appeal but only finds that these starting materials are "analogous" (*id.*). We determine that the examiner has failed to show any motivation one of ordinary skill in the art would have possessed to use the starting materials of the claims on appeal in the Elsheikh process, nor has the examiner established that one of ordinary skill in this art would have had a reasonable expectation of success in using the starting materials of the claims in the Elsheikh process. *See In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991).

Elsheikh specifically teaches that the "presence of HCl in the process of this invention makes the result unpredictable." See col. 1, ll. 31-32. Elsheikh discloses that using an HCl reactant readily forms chlorine gas by oxidation in air,

and the subsequent chlorine gas can chlorinate the methyl group of 1,1,1-trifluoroethane to form 1,1,1-trifluoro-2-chloroethane (col. 1, ll. 32-41). Accordingly, we determine that the examiner has not shown any evidence of a reasonable expectation of success when using HCl as a reactant with the acyclic saturated compounds recited in claim 1 on appeal, all of which have at least one hydrogen atom which could be replaced by chlorine. Furthermore, the examiner has not submitted any evidence that dehydrofluorination is applicable to a "wide range of ethane derivatives" (Answer, page 5), much less the specific halogenated ethane derivatives required by claim 1 on appeal.

Additionally, the examiner has failed to establish any convincing motivation for one of ordinary skill in this art to employ the halogenated ethane derivatives of claim 1 on appeal as the starting materials in the process of Elsheikh. Even assuming *arguendo* that the starting materials of the claims on appeal are "well known commercially available compounds," the examiner has failed to establish the desirability of using the presently claimed starting materials to produce the corresponding unsaturated products of the Elsheikh process. *See In re Brouwer,* 77 F.3d 422, 425-26, 37 USPQ2d 1663, 1666 (Fed. Cir. 1996); *In re Ochiai,* 71 F.3d 1565, 1570, 37 USPQ2d 1127, 1131 (Fed. Cir. 1995); *and*

In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984)(substitution of similar reactants does not make the process obvious "unless the prior art suggested the desirability of [such] a modification").

For the foregoing reasons, we determine that the examiner has failed to establish a *prima facie* case of obviousness in view of the reference evidence. Accordingly, the rejection of claims 1, 3-7 and 16-18 under 35 U.S.C. § 103 over Elsheikh cannot be sustained.

The decision of the examiner is reversed.

REVERSED

TERRY J. OWENS Administrative Patent Judge	)	
THOMAS A. WALTZ Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
CATHERINE TIMM Administrative Patent Judge	)	

TAW/jrg

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